The Mining Journal.

No. 488.] ENLARGED SHEET. [DECEMBER 28.

ICE.—MASTERS' PATENT MACHINE FOR MAKING ICE, with or without rough ice.—JOHN S. SWEETING, fish and oyster merchant, 179, Cheapside, sole agent, most confidently recommends to his friends and the public this PATENT ICE MACHINE for making ice, ice cream, water ices, &c., which can be done without the aid of ice, in a few minutes, in any climate, at a small expense. To gentlemen not having ice wells, merchants, captains of ships, keepers, confectioners, &c., it is invaluable 57

EUROPEAN LIFE INSURANCE AND ANNUITY COMPANY.
Established January, 1819.
EMPOWERED BY SPECIAL ACT OF PARLIAMENT, 7 & 8 VICTORIA, Cap. 49.
OFFICE—No. 16, CHATHAM-PLACE, BLACKFRIARS.

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Geo. James Sullivan, Esq., 1, Arlington street, and Ditcham Grove, Petersfield, Hants. 52
John Thwaite, Esq., 9, Foley place.

This OLD ESTABLISHED SOCIETY has recently received ADDITIONAL POWERS, by Special Act of Parliament, and affords FACILITIES in effecting INSURANCES to suit the views of every class of insurers.

PREMIUMS may be received yearly, half-yearly, or quarterly, or upon an increasing or decreasing scale.

Two-thirds of the profits are added triennially to the policies of those insured for life; one-third is added to the guarantee fund for securing payment of the policies of all insurers.

Those who are insured to the amount of £500 and upwards for the whole term of life, are admitted to vote at the half yearly general meetings of the proprietors.

ANNUAL PREMIUM FOR INSURING £100 ON A SINGLE LIFE.

Age next birth day	20.	30.	40.	50.	60.
Premium	£1 19 1	£2 8 1	£3 2 6	£4 5 6	£6 5 6

DAVID FOGGO, Secretary.

LIFE ASSURANCE AND ANNUITIES.

AUSTRALASIAN, COLONIAL AND GENERAL LIFE ASSURANCE AND ANNUITY COMPANY.
Capital £200,000, in 2000 shares.

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Henry Buckle, Esq.	C. E. Mangles, Esq.
Robert Brooks, Esq.	Richard Ovenden, Esq.
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SECRETARY—Edward Kitty, Esq. 53

The following are specimens of the premiums charged by this company for the assurance of £100.

AGE	20.	30.	40.	50.	60.
Annual premium	£1 10 5	£2 9 7	£3 13 5	£4 1 6	£6 3 2

This company offers the advantages of the guarantee of an ample subscribed capital—of permission to retain one-third of the premiums in their own hands (the portion so retained, with interest upon it, being deducted from the policy when it becomes a claim—of surrender, downcoming, and other modes of premium—and of participation in profits, at the end of every five years.

To emigrants to the Australasian colonies, assured for the whole of life, the company offer the permission to proceed to and reside in any of those colonies without extra premium, and to pay their premiums home. For residence in New Zealand, a moderate extra premium is charged.

In Sydney a board of directors, and agents in all the principal settlements—bankers in the colony.—The Bank of Australasia (incorporated by Royal Charter 1835), No. 1, Mincing-lane street, London.

ANNUITIES.

Annuitants participate in the profits of the company, and receive a rate of annuity much more favourable than can be granted by any company making its investments wholly in England. The company is enabled correctly to grant those favourable terms from the advantage it possesses of investing a portion of its funds at a high rate of interest. INDIA.

Tables of premiums for assurances on the lives of officers engaged in civil or in military service in the East Indies and China, may be seen at the offices of the company. AGENTS IN INDIA.

Calcutta	Messrs. Reid, Brodie and Co.
Madras	Messrs. Line and Co.
Bombay	Messrs. Rivett, Stewart, and Co.
Ceylon	Messrs. Ackland, Gisps, and Co.

Prospectuses and full particulars may be had at the offices of the company, No. 156, Bishopsgate street, corner of Cornhill.

NATIONAL PROVIDENT INSTITUTION, 51, GRACECHURCH-STREET, LONDON,
FOR MUTUAL ASSURANCE ON LIVES, &c.
Enrolled under the Acts of Parliament relating to Friendly Societies.

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MEDICAL DIRECTORS.
J. F. Cooper, M.D., F.L.S. Thomas Bevan, M.D., F.L.S.
SOLICITORS—Messrs. Hardwick and Dowsons.

The following statement shows the progress of the institution from the commencement, in Dec., 1835, to the 30th Nov. last:—

Years ending	No. of Policies issued.	Annual Income	Amount of Capital.
1836 November 30th	841	£ 2,851 12 6	£ 10,726 3 6
" " 1837	491	12,800 4 0	21,502 10 5
" " 1838	479	18,420 10 0	40,552 9 11
" " 1839	450	21,457 1 0	62,910 15 10
" " 1840	440	22,811 10 10	90,555 15 3
" " 1841	947	26,202 1 6	114,051 9 9
" " 1842	894	24,180 3 7	133,446 1 7
" " 1843	750	21,252 12 0	151,479 15 9
" " 1844	720	22,037 0 0	170,450 1 0
Total numbers	6012		

The gratifying result of the operation of the institution and results of the investigation on the 30th Nov., 1841, is exemplified in the following instances, exhibiting the profit accruing to policies which had been in existence from one to seven years:—

Policies in existence.	Age at commencement.	Sum assured.	Amount of Bonus.	Original Premium.	Reduction in Premium in lieu of Bonus.	Equal to a Bonus, this per cent. on the original premium of
Years.	Years.	£	£ s. d.	£ s. d.	£ s. d.	
1	29	1000	100 0 0	35 0 0	35 0 0	33
2	30	1000	177 10 0	34 1 0	69 11 0	99
3	29	2000	357 10 0	67 11 0	138 2 0	99
4	25	500	97 5 0	16 12 6	34 5 0	99
5	31	1000	215 0 0	33 4 0	69 4 0	99
6	40	500	99 10 0	17 10 0	34 12 0	99
7	28	500	97 5 0	16 10 0	34 10 0	103
8	35	1000	180 15 0	30 11 0	62 11 0	104
9	42	500	79 5 0	13 5 0	27 5 0	95

For local situations, or profits will be made to Accountants, &c.

Managers and other Proprietors retiring from the Assurance open, and solicitors, whose time would not suit their private practice, invited to correspond.

The report to the proprietors at the fourth annual meeting of members, held on the 30th inst., may be had on application at the office.

Dec. 26, 1844. JOSEPH WILDEN, Secretary.

LOTTERY OR GAMBLING, REPREHENDED AND ALL DISHONOURABLE ARTICLES FROM EXCLUDED, &c.

[illegible] 54

SELF PRESERVATION. A Popular Essay on those constantly [illegible] 55

ORIGINAL CORRESPONDENCE.

ACT FOR INCORPORATING JOINT-STOCK COMPANIES.

SIR,—We are indebted to you for your letter to Mr. Rogers, and I am sure all will agree with me that his reply is couched in the most handsome manner; you will excuse me asking you, however, whether you consider that his remark about the cost-book system applies to foreign mines, and as the Cobre, Santiago, and Copiapo Companies, are neither in this country, nor, I believe, under the cost-book system, how are we placed?

Hall of Commerce, Dec. 26. A SUBSCRIBER IN ALL THREE.

[We have addressed a letter to the registrar, with reference to a particular company, the substance of the reply we shall be glad to afford our correspondent in an early Number.]

EXPLOSIONS IN MINES.

SIR,—Please to indulge me in a few "last words," confirmatory and explanatory of what I have already advanced. In the goaves, nothing that can be called *ventilation*, in the legitimate sense of that term, can take place, under existing circumstances. These goafs are magazines of "fire damp," Etna's replenished with the fuel of explosion, generators of "hydro-carbonate," and centres of volcanic action, ready to issue forth from these reservoirs, mingle with the air currents, and complete the conditions of explosion, on every fall of the barometer. By the *present* plan of working the coal, as Mr. Mather has shown, the danger is infinitely increased. The pillar working, and the constant formation of goaves, consequent on their extraction, must always create, in a multiplied ratio, renewed sources of great and prominent danger; and how these goaves are to be *ventilated at all*, I cannot see?—but it appears to me certain that the phenomena they exhibit, give palpable evidence that Mr. Ryan's system is rooted in truth, and based securely, because founded on the immutable laws of nature. I think that Mr. Mather not only shows the necessity for short air courses, by more shafts, but also proves, that a *new plan of working* coal mines altogether, is imperatively required. It is very properly stated that the motion of air might be *scarcely*, if at all, *perceptible* in those "*waste places*," among the goaves; though in the main air passage, immediately connected with the downcast shaft, the current might be flowing at the rate of eight miles an hour. Mr. Buddle had *three* downcast shafts in the Wall's End Colliery, for an extent of workings, amounting, in the aggregate, to 130 acres, with 75,976 cubic feet of air per minute, and yet it exploded, and terrible was the havoc. At Haswell—that paragon of pits!—there was only *one* downcast shaft, with *less* air, for the ventilation of *five hundred acres!* If Wall's End exploded, notwithstanding, and though under the superintendence of Mr. J. Buddle, *à fortiori*, such a catastrophe was naturally and reasonably to be expected in the Haswell Colliery; and, albeit the seeming efforts to make "the worse appear the better reason," Mr. Mather has *demonstrated* that the Haswell Colliery was, and is, a *fiery* pit. In recently reading Mr. Mather's admirable and luminous letters, I am glad to find, what had escaped me in the very cursory glance I previously took of them, that he had arrived nearly at the same conclusion as myself, as to the immediate cause of the explosion, and which I had deduced directly from an examination of the evidence on the inquest. I am glad, therefore, to have that opinion corroborated and confirmed by such an authority as Mr. Mather; while the priority of publicity belongs to him. J. MURRAY.

Hull, Dec. 21

VENTILATION OF MINES.—INSPECTORS' REPORT.

SIR,—The letter I wrote you some few weeks ago, desiring some of your intelligent correspondents to furnish your readers with a plan of the Haswell Colliery workings, in order that they might form an opinion as to whether the present system of working and ventilating them was the best that could be adopted, has been well responded to; and I trust the subject will yet be pursued, until strict justice is afforded to all parties. Protection to the miner has, I know, long engaged your attention, and I am glad to find it is taken up so warmly in all parts of the country. I should have replied to the letter of "Passer-by" in due course, had not Mr. Denham's able letter appeared in your Journal. He has there stated my opinion with regard to the evil of dividing and subdividing the air, &c., perhaps better than I could have done it myself, and, therefore, for the present, I shall not trouble you upon that part of "Passer-by's" letter; but there is another part which I shall, with your permission, call the attention of your readers to. It is that in which he endeavours to make us believe, that not only does there no blame attach itself to the proprietors and agents of the colliery in the late accident, but that they are almost entitled to a vote of thanks for what they have done. I have received a copy of the report made by Messrs. Lyell and Faraday, with plan of the workings and section of the strata accompanying it, and will now give you a few extracts from it, in order that you may see how he has passed by the true meaning and intent of those gentlemen. It is true, they commence their report by stating that—"They consider the proprietors of the colliery from any blame in the late accident, September 28, 1844;" and then they proceed to state, that they next intend "to consider how the occurrence of similar catastrophies may be obviated in future." This is exactly what is wanted; but I would ask, if Messrs. Lyell and Faraday considered the present system of airing and working this colliery at all perfect, why they should, in the very first paragraph of their report, set themselves about altering it? At page 4 they inform us, that "it will be seen by the section, that several upper seams of good coal, the united thickness of four of which is no less than thirteen feet, have been left untouched, in order that the thicker and more valuable seam, called the Hutton, should first be worked out; in adopting this plan, the proprietors have been guided by considerations of present profit, which the competition of other neighbouring coal-works renders indispensable. Nevertheless, it may not be improper for us to advert to two evils which result from this system:—1. The upper seams, which are undermined on the extraction of an inferior bed of coal, sink down, often unequally, from failure of support, and become fractured, and, therefore, much more liable to give out gas, which gas (it is well known by experience) has sometimes found its way into the workings far below, as pointed by Mr. Buddle, in his evidence given to the committee of the House of Commons, in 1835, by which some of the most serious accidents from fire damp have been occasioned. The greater the number, and the larger the size, of the upper seams, and the nearer they lie to the seam which is worked at a lower level, the greater the risk of such communication by fissures.—2. The higher beds of coal, which might have been worked to advantage before they were undermined, and when the expense of a shaft had been already incurred, may never be available after the workings have been for many years abandoned, and the shaft partially filled up, and after the coal has been injured by the continued percolation of water and gas through its fissures, whereby property of great value may be irrecoverably lost to the country. With this view, and to prevent this prospective evil to the mines belonging to the Duchy of Cornwall in Somersetshire, it has recently been proposed to make provisions in the new leases, to ensure the more regular extraction of all the workable seams, which, exclusive of the great seam, range from fourteen inches to two feet in thickness, the whole of them being less considerable than five of the seams neglected in working the Haswell shaft. Before going into a particular consideration of the causes of the late accident at Haswell, and the possible means of preventing the occurrence of the like in future, we wish to point out the fact well known to the miners in this district, that the pits on the north side of the Wear, in which the Hutton seam is worked, are more infested with fire damp than those on the south side of that river. If, therefore, at Haswell Colliery, situated among the latter, the danger has proved to be so great, still more company will it be to endeavour to take additional precautions elsewhere. There can be no doubt that, as regards the safety of the men in coal mines from injury, consequent upon fire damp, ventilation is of the utmost importance; but there is a practical limit, beyond which it cannot be carried—for, to works deep and extensive as the coal mines often are, to dig shafts other shafts would quickly involve an expense more than the value of the produce of the mine, and leave the effect of clearing it altogether. There is one point in ventilation, however, which, at the same time that it appears to us capable of improvement, touches a part of the mine of the utmost consequence to the safety of the whole; and though our observations and thoughts are not founded upon long experience, or the examination personally of many mines; yet, considering that the one we have so recently been called to observe is as simple in the character of its workings, contains as small a proportion of fire damp, and is as well ventilated as any in that part of England—surpassing in these respects most of the mines—we do not think that they will be exaggerated in respect of, or less applicable to, other cases. We allude to the ventilation and general character of the goaf."

Will you be kind enough to furnish "Messrs. Bagnall and others" with the real name and address of this "Passer-by;" for my own part, I doubt not but he is one of, or closely connected with, those gentlemen who refused admission to Mr. Dunn into the works at the time of the late accident; but be that as it may, he has, already (in my opinion), with the aid of Messrs. Lyell and Faraday, said quite enough to convince any one at all conversant with mining operations, that not only in their system of working and ventilation not the best, either for the working of coal to profit, or safety to the men, but almost the worst that could be thought of; and as long as it is pursued, I fear you will frequently have to record similar accidents to the one at Haswell. We are informed that the Haswell estate contains about 500 acres, which it appears they intend working through their present pits; for Messrs. Lyell and Faraday state, that "to sink shaft after shaft" in these deep mines, would involve an expense more than the value of the mine." In the section of the pit furnished by these gentlemen, they show "thirteen feet of good workable coal," besides 5 ft. 5 in., the thickness of the lower, or Hutton, seam; the whole of which may safely be reckoned to produce 20,000 tons per acre, or 200,000 tons in every ten acres of the property. Now, supposing the proprietors were compelled to sink a pit the same depth as the Hutton pit, at a cost of 8*l.* per yard, in every ten acres of their property, or fifty pits in the whole estate, it would not amount to much more than 2*d.* per ton upon the produce of each pit; or, supposing them to cost 24*l.* per yard, only 6*d.* per ton; and yet the "wise men" of the north rather prefer keeping open fifty or sixty miles of air courses, with very long and expensive underground roads for horses and men to travel in, than adopt this most simple, and yet effectual, cure for the wholesale destruction of both life and property. I will at some future time, with your permission, lay before your readers Messrs. Lyell and Faraday's plan for ventilating the goaf, and the safe carrying on of the workings. JAMES CADMAN.

Cwm Brân Colliery, Dec. 19.

DIFFERENT WAYS OF WORKING COAL MINES—GAS CLOCKS.

SIR,—It has occurred to me, that it would be interesting, if not beneficial, to a numerous class of your readers, were they to compare the methods of working coal mines, which seems to differ much in one district from another. I am led to this remark, also, from a statement, by one of your correspondents of last week—viz., that long wall work is a necessity, difficult of ventilation, because there is four sides to it. Would it do with two sides?—(*Qy?* How are the fiery veins of coal worked in Shropshire?)

That mining has received its requisite consideration, I think is questionable, although there are circumstances which bear evidence of great mining advancement, and although, in some respects, the subject is likely to receive the attention of the Legislature, it does not follow that, consequently, mining generally will be conducted on more scientific and efficient principles—that, I think, will, in a great measure, rest with the capability of management. The increasing interest attached to the mineral districts of Wales, I am willing to confess, require that every improvement should be made to the development and bringing to light her hidden treasure. Whilst plodding my way through some of the mineral hills of Wales, and naturally enough led to contemplate the inexhaustible quantity of mineral produce they contain, with the vast amount of labour which must necessarily be bestowed, and the accumulation of wealth derived from such sources, I feel elevated at the prospect of a flourishing epoch in Welsh commerce, to be drawn chiefly from those everlasting hills. What with the advantages of railway transit, which the South Wales Railway is destined to confer upon the Principality, with the superior quality of her mineral produce, which cannot fail to support the Welsh trade, we may fairly calculate on competing with any other district in the United Kingdom. In connection with that, I am bold to state, that the knowledge of mining is on the increase in Wales, especially that part distinguished by the name of coalfield, which is now carried down from Ebw to Bassaleg, and, according to prophecy, will shortly be grasped by the hand of science, and rescued from the mouldering fangs of practical bunglers.

I have just read in the *Merthyr Guardian* the description of a *Gas Clock*, whether of Welsh manufacture I cannot define. If so, the readers of the *Mining Journal* will be apt to conclude that the Welsh people are desirous of becoming the patrons of genius in the art of ventilating mines. It will, it is said, give each notice of the presence of deleterious gas in mines, as will enable persons to take the necessary precautions to guard against explosions. An explosion from the admixture of carburetted hydrogen with atmospheric air, can only take place when the former exists in a certain and known proportion; when the quantity has reached or exceeded this point, the contact of a light instantly causes an explosion. This instrument, recently invented, has a sort of tell-tale, to show the existence of danger; it is simple, ingenious, and effectual; connected with a chemical solution is a kind of float, nicely graduated, and attached to a counterpoise. This solution is of such a nature that it undergoes a change when acted upon by the admixture of carburetted hydrogen, and, when saturated to a certain point, the float changes its position, and, acting in its turn upon the counterpoise, a spring is let loose, and strikes upon a bell or drum, giving out a loud sound, and thus indicating the presence of danger. This interesting test is not liable to derangement, and the whole apparatus is compressed within a small compass, and of little cost—so much for the clock!

Aberpennay, Dec. 16. A SOUTH WALES COLLIER.

VENTILATION OF COAL MINES—LONG WALL WORK.

SIR,—I have ventured once more to intrude on the columns of your excellent Journal, as an advocate for long wall work in fiery coal mines, as the most economical, and, at the same time, running the most successful mode of ventilation; and in part drew my conclusion from the unexpectedly low explosions which take place in the Shropshire coal fields—having formed my opinion more from experience than information. I have no doubt but that some of the principal working veins of coal there, are as fiery as any in the north of England. I have known when nothing more than a common ditch has been cut across the grass line of the strata, when touching those seams of coal, the gas has become explosive within six feet of the surface; and where these veins are worked at the depth of 150 to 200 yards, it requires the most judicious management to keep the work in a state of safety; and that is done by carrying good air ways at the extreme end of the workings, regulating the current of air by a furnace on the top of the upcast pit, sometimes built like the shaft of an engine. The whole body of air passing through the walls, the face of the workings being uniform, commences its circulation to the pit; the horseways, which are carried level courses, in some industries, are double drawn near the coal walls, only the length of the horse and tram interval there—so that one door is shut whilst the other is opened, and protects any fractional portion of the air as the work goes on, and in proportion to the distance the coals have to be brought from those walls, which are worked deep, and one of the best-ways, other shafts are sunk, to reduce the expense of long horse-ways and the inconvenience of long air ways; and when those rules are observed, the mine seldom suffers from imperfect ventilation. Such a plan as removing the velocity of the current of air, and dividing it into sections, is scarcely thought of, neither required. Small and pillar work, or something like it, I presume, is still carried on in the north of England, and requires a different mode of ventilation, by encouragement of their goaf waters, as one shaft leads another to accumulate; an equal degree of atmospheric air cannot be brought to such working places, as any rule it would be more intricate; this I know, from the same mode of working in Wales, where it is practised, if one part happens to be fired at two yards in advance of the air, it is liable to explosion from a naked candle.—*Aberpennay, Dec. 23.* A SOUTH WALES COLLIER.